



PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Koji KATANO

Group Art Unit: 1795

Application No.: 10/591,036

Examiner: C. LEE

Filed: August 29, 2006

Docket No.: 128477

For: CONTROL APPARATUS AND CONTROL METHOD FOR FUEL CELL

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This request is being filed with a Notice of Appeal. Review of the February 23, 2010 Final Rejection is requested for the reasons set forth in the attached five or fewer sheets.

Should any questions arise regarding this submission, or the Review Panel believe that anything further would be desirable in order to place this application in even better condition for allowance, the Review Panel is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,

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Date: May 20, 2010

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REMARKS

Claims 1-15 are pending in this application. The Office Action rejects claims 11-15 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Application Publication No. 2003/0157383 to Takahashi. This rejection is respectfully traversed.

In rejecting the pending claims over Takahashi, the Office Action states "[t]he functional recitations of the claimed controller have been considered. However, it was not given patentable weight because it has been held by the courts that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus if the prior art apparatus teaches all the structural limitations of the claim." See pages 2 and 3 of the Office Action. Supporting these assertions is reference to a 1987 Decision from the Board of Patent Appeals and Interferences ("Board") in the case of *Ex parte Masham*, and to MPEP §2115. The Office Action states that "[i]t is noted that the functional recitations of the controller have been met by Takahashi because the control apparatus of Takahashi *has the capabilities of functioning as* claimed in claims 11-15" (emphasis added). These assertions of the Office Action not only misstate what Takahashi "has the capabilities of functioning as," but also misstate the law.

Claim 11 recites, among other features, a controller that "detects gas pressure within at least one of the oxidizing gas supply line and the cathode; dynamically calculates a target hydrogen partial pressure regarding a hydrogen pressure among a gas mixture within the anode; calculates a hydrogen supply pressure of hydrogen to be supplied to the fuel cell, based upon the target hydrogen partial pressure and the detected gas pressure; and controls hydrogen so as to be supplied from the hydrogen supplying device to the fuel cell at the hydrogen supply pressure." Takahashi makes no calculation of a target hydrogen partial pressure regarding a hydrogen pressure among a gas mixture. Takahashi does not calculate a hydrogen supply pressure of hydrogen to be supplied to the fuel cell based on the dynamically

calculated target hydrogen partial pressure and the detected gas pressure. Takahashi does not control hydrogen so as to be supplied from the hydrogen supplying device to the fuel cell at the calculated hydrogen supply pressure. The referred-to paragraphs of Takahashi are limited to a discussion of supplying hydrogen rich gas via a hydrogen supplying passage (see paragraph [0032]), but not at any specifically calculated pressure other than "a constant pressure" (see paragraph [0040]). The assertions in the Office Action regarding what any allegedly corresponding controller in Takahashi "has the capabilities of functioning as" are not supported by the explicit disclosure of Takahashi.

With regard to the wholesale dismissal of the functional language based on dated Board precedent, it must be noted that the Federal Circuit has routinely held that "functional language can be a claim limitation." *Microprocessor Enhancement Corp. v. Tex. Instruments Inc.*, 520 F.3d 1367, 1375 (Fed. Cir. 2008) (holding functional language may be employed to limit the claims without using the means-plus-function format); *see also K-2 Corp. v. Salomon S.A.*, 191 F.3d 1356, 1363 (Fed. Cir. 1999) ("The functional language is, of course, an additional limitation in the claim."); *Wright Med. Tech., Inc. v. Osteonics Corp.*, 122 F.3d 1440, 1443-44, (Fed. Cir. 1997) (analyzing functional language as a claim limitation).

For at least the foregoing reasons, and because Takahashi clearly does not disclose any controller corresponding to that positively recited in the pending claims, claim 11 is neither taught, nor would it have been rendered obvious, by Takahashi. In this regard, the Office Action fails on its face. Further, claims 12-15 are also neither taught, nor would they have been rendered obvious, by Takahashi for at least the respective dependence of these claims on a patentable base claim, as well as for the separately patentable subject matter that each of these claims recites. For example, claim 13 includes additional features that the controller detects a temperature of the fuel cell, corrects a target hydrogen partial pressure based upon the temperature of the fuel cell and calculates the hydrogen supply pressure of hydrogen to be

supplied to the fuel cell based upon the corrected target hydrogen partial pressure and the detected gas pressure. As indicated above, the Takahashi control apparatus does not perform the specified calculations, nor does Takahashi modify any such calculations based on temperature. In fact, the only portion reference regarding, for example, temperature features with regard to paragraph [0043] of Takahashi state only that "[i]t should be noted that the performance lines W1 through W4 in the drawing differ slightly depending on the temperature and pressure during operation of the fuel cell stack 1." There is no manner by which this bare mention of temperature can be considered to include any input to a control apparatus for making the specified calculations recited in the pending claims.

Accordingly, reconsideration and withdrawal of the rejection of claims 11-15 under 35 U.S.C. §102(b) as being anticipated by Takahashi are respectfully requested.

The Office Action rejects claims 1-8 and 10 under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of U.S. Patent No. 6,632,552 to Yamanashi. The Office Action also rejects claim 9 under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of Yamanashi and further in view of U.S. Patent No. 6,667,128 to Edlund. These rejections are respectfully traversed.

It should be noted that a previous Office Action rejected claims 1, 2, 6, 7, 11 and 12 under 35 U.S.C. §103(a) as being obvious over Yamanashi in view of Takahashi. Clearly, those rejections were overcome because this Office Action finds it necessary to reverse the references. Then, in a very strained manner, the Office Action attempts to apply those references to the subject matter of the pending claims. Interestingly, the Office Action asserts that Applicant's previous arguments over the combination of Yamanashi and Takahashi "have been considered but are moot in view of the new ground[s] of rejection." It is unreasonable for the Office Action to reverse the references and then to assert that these are wholly new grounds for rejection that do not require the Examiner to specifically address Applicant's

arguments traversing the prior art rejections of the Office Action made previously when it is clear that the same references are being reapplied.

The above notwithstanding, the Office Action goes on, in a somewhat vague manner, to attempt to show where many of the features recited in the pending claims are allegedly shown in the Takahashi reference. The analysis of the Office Action fails for at least the following reason.

Claim 1 recites, among other features, a target hydrogen partial pressure determining unit configured to dynamically calculate a target hydrogen partial pressure regarding a hydrogen pressure among a gas mixture in the anode; a hydrogen supply pressure calculating unit configured to calculate a hydrogen supply pressure of the hydrogen to be supplied to the fuel cell based upon the target hydrogen partial pressure and the gas pressure detected by the cathode-side gas pressure detecting means; and a hydrogen supply control unit configured to supply hydrogen from the hydrogen supplying means to the fuel cell at the hydrogen supply pressure.

The Office Action quotes various paragraphs from Takahashi and asserts that the references discloses a target impurities partial pressure determining unit configured to dynamically calculate a target impurities partial pressure allegedly including all of the features positively recited in the pending claims regarding the target hydrogen partial pressure determining unit. The analysis of the Office Action is unreasonable first in that there is no dynamic calculation of any target partial pressure. Rather, as is explicitly stated in paragraph [0050], a *voltage* is detected, and as long as the voltage exceeds the output voltage per cell, a determination is made that the impurity gas concentration has not reached the upper limit of allowable gas concentration. Stated more succinctly, Takahashi measures voltage, compares that voltage to some predetermined voltage level, and in that manner determines that a concentration of impurity gases has not reached a specified, predetermined threshold. This

cannot reasonably be considered to correspond to dynamically calculating any partial pressure despite the assertions to the contrary in the Office Action.

The Office Action concedes that Takahashi does not disclose any calculation is based on a gas pressure detected by the cathode-side gas pressure detecting means. Rather, the Office Action alleges that Yamanashi makes up for this shortfall with respect to the subject matter of the pending claims. This analysis of the Office Action also fails at least because the portions of Yamanashi that are cited refer only to controlling differential pressures between the anode side and the cathode side to avoid rupturing the electrolytic membrane. Simply because pressures are measured on either side of the membrane does not mean that those inputs are taken to make any calculation regarding a hydrogen supply pressure of hydrogen to be supplied to the fuel cell based on the gas pressure detected by the cathode-side gas pressure detecting unit *and the target hydrogen partial pressure*, as is recited, for example, in independent claim 1.

Finally, the alleged reason to combine the references is neither based on any teaching of the applied references nor does it render obvious the specifically-recited claim features.

For at least the foregoing reasons, claim 1, and the claims depending therefrom are patentable over the asserted combinations of applied references.

In summary, proper application of the correct standards, and reasonable interpretation of the applied references leads to a conclusion that the current rejections are factually and legally in error.